**Building a Patient Health Monitoring System using ESP8266 (NodeMCU), a pulse sensor, DHT22 Temperature & Humidity Sensor, and an OLED display is a great project. Below is a step-by-step guide to help you create this system:**

**Components Needed:**

* NodeMCU (ESP8266)
* Pulse sensor
* DHT22 Temperature & Humidity Sensor
* OLED Display (SSD1306)
* Breadboard and jumper wires

**Wiring:**

* Connect the NodeMCU to the breadboard.
* Connect the VCC and GND pins of the pulse sensor to the NodeMCU.
* Connect the signal (analog) pin of the pulse sensor to the A0 pin of NodeMCU.
* Connect the VCC and GND pins of the DHT22 sensor to the NodeMCU.
* Connect the signal (data) pin of the DHT22 sensor to the D1 pin of NodeMCU.
* Connect the SDA and SCL pins of the OLED display to the D2 and D1 pins of NodeMCU, respectively.

**Instructions:**

* Open the Arduino IDE.
* Copy and paste the code above into a new sketch.
* Install the required libraries.
* Select the correct board (NodeMCU) and port.
* Upload the sketch to the NodeMCU.

**Testing:**

* Open the Serial Monitor to view the heart rate, temperature, and humidity values.
* Observe the OLED display for real-time updates.

You need to install the following libraries using the Arduino Library Manager:

**1. Adafruit SSD1306:**

- Open the Arduino IDE.

- Go to "Sketch" -> "Include Library" -> "Manage Libraries..."

- In the Library Manager, type "Adafruit SSD1306" in the search bar.

- Look for "Adafruit SSD1306 by Adafruit" and click on it.

- Click the "Install" button.

**2. Adafruit GFX:**

- Follow the same steps as above, but this time search for "Adafruit GFX".

- Look for "Adafruit GFX Library by Adafruit" and install it.

**3. DHT Sensor Library:**

- Go to "Sketch" -> "Include Library" -> "Manage Libraries..."

- In the Library Manager, type "DHT sensor library" in the search bar.

- Look for "DHT sensor library by Adafruit" and click on it.

- Click the "Install" button.

After installing these libraries, you should be able to compile and upload the code to your NodeMCU without any issues. Remember to select the correct board and port in the Arduino IDE before uploading the code.

Code : [Download](https://github.com/vishal-ravi/projects/blob/main/Patient%20Health%20Monitoring%20System)

#include <Wire.h>

#include <Adafruit\_SSD1306.h>

#include <Adafruit\_GFX.h>

#include <DHT.h>

#define SCREEN\_WIDTH 128

#define SCREEN\_HEIGHT 64

#define OLED\_RESET -1

Adafruit\_SSD1306 display(SCREEN\_WIDTH, SCREEN\_HEIGHT, &Wire, OLED\_RESET);

#define DHT\_PIN D1

#define PULSE\_PIN A0

DHT dht(DHT\_PIN, DHT22);

unsigned long lastDisplayUpdate = 0;

void setup() {

Serial.begin(115200);

dht.begin();

display.begin(SSD1306\_I2C, 0x3C);

display.display();

delay(2000);

display.clearDisplay();

}

void loop() {

float temperature = dht.readTemperature();

float humidity = dht.readHumidity();

int heartRate = analogRead(PULSE\_PIN);

if (millis() - lastDisplayUpdate > 1000) {

display.clearDisplay();

display.setTextSize(1);

display.setTextColor(SSD1306\_WHITE);

display.setCursor(0, 0);

display.print("Heart Rate: ");

display.println(heartRate);

display.print("Temperature: ");

display.println(temperature);

display.print("Humidity: ");

display.println(humidity);

display.display();

lastDisplayUpdate = millis();

}

delay(100);

}